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10/561,000	12/16/2005	Toshihiko Ohashi	0216-0518PUS1	9147

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

ROBINSON, LAUREN E

ART UNIT	PAPER NUMBER
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1794

NOTIFICATION DATE	DELIVERY MODE
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11/26/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/561,000	Applicant(s) OHASHI ET AL.	
	Examiner LAUREN ROBINSON	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of claims 1-6 was with traverse and the applicant argues on page 7, paragraphs 1-3 argues that as the claims now include additional limitations, the groups now share a special technical feature and therefore have unity of invention.

However, this is not persuasive because although undue burden was disclosed, the restriction requirement was based on the lack of unity within the applicants' groups. Therefore, the restriction requirement was proper. Also, regarding the argument that the claims include additional limitations which are not present in the prior art and as such, a special technical feature between all groups is present is also not persuasive because as illustrated, the new limitations provided in claim 1 are taught or would have been obvious in the prior art. Therefore, unity is lacking and the restriction requirement is deemed proper and made **Final**. .

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being obvious over Toshiaki et al. (JP-2002-079600) in view of Nakahigashi et al. (US PN. 4,866,746) in further view of Haaland et al. (US PN. 5,991,081) .

Regarding claim 1: Toshiaki et al. teach an antireflection film (title) comprising particles and a binder wherein the particles are bound through said binder (Par. 0007). The reference teaches that the particles are silica (Par. 0009) and the binder is polymeric (Par. 0007). The film is taught to have a silica particle content of 40 to 80 wt% (Par. 0009), and a mathematical average surface roughness of 100nm or less (0017). The examiner notes that 100nm or less overlaps applicants' range of 1.5 nm or less, thus providing a prima facie case of obviousness. However, the reference is *silent regarding the silicon atomic % within the surface obtained by x-ray spectroscopy and a reflectance of less than 1%*.

Consider the silicon atomic % in the surface obtained by x-ray spectroscopy

Although the limitation is not disclosed, this would have been obvious. For example, it is known that the amount of silicon atoms is a result effective variable as it is known that increasing the amount of silicon atoms alters the hardness of a film as illustrated in Nakahigashi et al. (Col. 5, lines 15-35) and it would be recognized by one with ordinary skill in the art that increased hardness would be desirable as this would provide abrasion resistance, etc.

In particular, it would be specifically obvious to have increased silicon atom content within the surface of a film because it would be recognized that since the outermost surface of the film is the most prone to abrasion, it would be desirable to

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obtain increased hardness in the surface portion. Therefore, since the amount of silicon atoms is a result effective variable that alters the hardness and it would be recognized by one with ordinary skill that hardness in the surface portion would be advantageous, one would find it obvious to adjust the amount of silicon atoms to any value within the surface to obtain desired results.

Also, while the overall film can be comprised of the above 40 to 80 wt% SiO₂, one would recognize that the surface can have increasing amounts of silicon atoms by any known means of the art. For example, Toshiaki discloses that the film is applied by spraying, etc. (0028) and one would know that the amount of silicon in the surface of said film could be modified by spraying the above coating comprising the 40 to 80 wt% SiO₂ onto the substrate and then during the final spraying phase of the film, silicon atoms of the amount chosen can be incorporated into the spray. One would recognize that this would cause the amount of silicon atoms to be in the films surface as the surface portion will comprise the final materials sprayed onto the substrate. would be able to be adjusted by spraying, etc. silicon atoms during the final

As such, it would have been obvious to one of ordinary skill at the time of invention to modify Toshiaki to include that the percentage of silicon atoms can be adjusted to any amount including applicants' claimed amounts, especially in the surface of the film by methods known in the art, in order to obtain desired surface hardness, etc. while still have desired SiO₂ content within the body of the film.

Also, although it is not included that the amount which will now be including in Toshiaki was obtained by x-ray spectroscopy, since the amount is present; the amount

being obtained by any known measurement such as x-ray spectroscopy would be inherent.

Consider a reflectance of less than 1%

While the above limitation is not taught, one of ordinary skill would find it obvious. For example, within the above reference, minimized reflectance is desired (antireflection) and although they do not specifically provide an example that has all the characteristics of claim 1 including a 1% or less reflectance, one of ordinary skill would find it obvious to minimize the reflectance to desirably zero. They would know that this could be done by adjusting the thickness of the layer due Haaland et al. teaching that reflectance is crucially dependent on coating thickness (Haaland Col. 2, lines 29-37).

Therefore, one would recognize that reflectance is a result effective variable that can be optimized by adjusting thickness and through routine experimentation; one can obtain desired results such as the minimal reflectance which would be recognized as zero (antireflection). As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Toshiaki to include that the thickness of the coating can be optimized to any thickness in order to provide for any desired reflectance including zero reflectance (meeting applicants' less than 1%) as one would see as desirable for an AR coating **(Claim 1)**.

Furthermore, the reference teaches that the polymeric binder is comprised of functional groups which are covalently bound by the silica particles (Par. 0011-0014) **(Claim 2)**. Also, the reference teaches that the molar ratio of the functional groups of said polymer to the silicon atoms is from 0.04 to 0.25 (Par. 0012) **(Claim 3)**.

2. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being obvious over Toshiaki et al. (JP-2002-079600), Nakahigashi et al. (US PN. 4,866,746) and Haaland et al. (US PN. 5,991,081) as applied to claim 1 above in view of Scholz et al (US Patent No. 5,585,186).

As discussed, Toshiaki et al. teach an antireflection film with the applicants' characteristics of claim 1 including 40 to 80% silica being present. They further teach that the film is applied to a substrate (Par. 0006). However, they are silent with regard to the particles being silica string particles with a moniliform or fibrous shape, and the film having a porosity of 3 to 50% by volume.

Regarding claim 4: Scholz et al. teach an antireflection coating composition (abstract) comprised of a polymeric binder (Col. 3, lines 35-40) and metal oxide particles such as silica particles (Col. 4, lines 11-25). Furthermore, Scholz et al. teach that the metal oxide particles are preferably spherical but can be fibrous in order to produce antireflection properties (Col. 4, lines 55-65).

Toshiaki et al. and Scholz et al. disclose analogous inventions related to an antireflection film comprised of silica particles and a binder wherein the film is applied to a substrate. The examiner notes that while Toshiaki et al. does not disclose the shape of the particles, the purpose of both references is to create an antireflection film. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Toshiaki et al. to include that fibrous silica particles can be used in order to produce antireflection properties (**Claim 4**).

Regarding claim 5: The examiner notes that as discussed above, Toshiaki et al.

includes that the silica particles can be present at 40 to 80% by weight of said film and due to the modification above, the silica particles can have a fibrous shape (**Claim 5**).

Regarding claim 6: Scholtz et al. also teach that the film has a porosity caused by voids between the metal oxide particles and that the porosity should be between 25 to 45 % by volume in order to minimize reflection of the substrate (Col. 4, lines 10-55).

As discussed above, Toshiaki et al. and Scholtz et al. disclose analogous inventions and as such, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Toshiaki et al. to include that the film has porosity due to the voids between the silica particles can that the porosity should be between 25 to 45% by volume in order to minimize reflection of the substrate (**Claim 6**).

Response to Arguments

Applicant's arguments filed July 17, 2008 have been fully considered and the argument regarding Toshiaki not disclosing a surface silicon atom content as claimed is persuasive making the present action **Non-Final**.

However, applicants argue on page 14, paragraph 1 that the surface roughness of Toshiaki is 2nm to 10nm which is higher than their "no more than 1.5". This is not persuasive because although the reference illustrates that they "prefer" 2nm to 10nm, they do teach that the roughness can be 100nm or less which overlaps the applicants' range and therefore, provides a prima facie case of obviousness.

Applicants argue on page 14, paragraph 1 that Toshiaki does not teach the silicon content or the important of the combination of roughness and content in the

improvement of mechanical strength. This is not persuasive because as discussed, the silicon content is obvious and while the reference does not teach the importance of the combination, this is not needed as long as the limitations are taught.

Applicants' argue the difference in property combinations of the reference and applicants' disclosure on page 15 and page 16 and argue that the reference does not provide the same effects as applicants' invention. However, this is not persuasive because all the limitations as claimed are taught and would have been obvious as illustrated above. Although, the reference does not teach hardness which applicants' regard as important to their invention, the examiner notes that this limitation is not being claimed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAUREN ROBINSON whose telephone number is (571)270-3474. The examiner can normally be reached on Monday to Thursday 6am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-2721284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lauren E. T. Robinson
Examiner
AU 1794

/LAUREN ROBINSON/
Examiner, Art Unit 1794

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/Carol Chaney/
Supervisory Patent Examiner, Art Unit 1794